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BY
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Attending Surgeon to the German and New York Skin and
Cancer Hospitals

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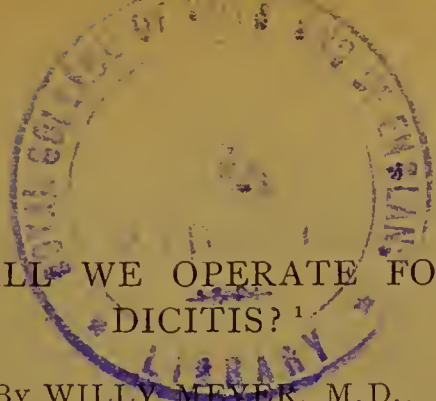


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WHEN SHALL WE OPERATE FOR APPEN- DICITIS? ¹

BY WILLY MEYER, M.D.,

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HOSPITALS.

SOME time ago a colleague while reading a paper on appendicitis excused himself for again treating a subject that had been discussed so often in our societies and considered in our journals within recent years. Not long afterward I heard another colleague say that "he was absolutely convinced that ere long this craze of the laity to be operated upon for appendicitis would cease; far fewer operations would soon," he thought, "be performed for this reason."

If anything could induce me to read a paper on appendicitis, these remarks of well-known gentlemen would. In this particular instance they are not the cause. This paper was ready, in part at least, last winter. For special reasons I felt myself unable to finish it.

In my estimation we doctors cannot discuss this subject too often. If the laity should actually sooner or later give up this craze for operation, the doctors only are responsible for it.

Now, I am not of the opinion that we should in our medical societies still discuss the pathological-anatomical aspect of appendicitis. Most exhaustive treatises, that deal also with this chapter of the disease, have appeared here and abroad within the last years. Nor do I believe it to be of special value to give a synopsis of all the cases operated upon by the single man, to give "personal statistics" before a gathering of general practitioners. At our time, when almost

¹ Read before the Metropolitan Medical Society, December 23, 1895.

ops a more or less pronounced chill with quick, continued rise of pulse and of temperature, mainly of the former, after having had for a short while or formerly annoying sensations in the appendix region, this chill must be for the general practitioner the signal for an immediate call for surgical help.¹ Not always a chill introduces these acute symptoms. But if it does, slight or severe, it is of great pathognomonic value. Do not allow yourselves, gentlemen, to be deceived at this early time of the serious disease by the patient's general good feeling. The latter often has nothing whatever to complain of, did not and does not vomit, has appetite, feels when questioned "very well." But the rapidly rising pulse above 120, the quick respiration, the high and increasing temperature, more or less pain on pressure in the appendix region over Douglas' sac—by vaginal or rectal palpation, also over the left side of the abdomen, especially in the left lumbar region, showing the involvement of the entire sac—and all these symptoms after a sudden onset, will properly direct the experienced. Quick work is needed here. Not hours, minutes count. I know very well, Mr. President and gentlemen, that the immediate shock of the sudden blood-poisoning may be so marked that the surgeon hesitates to add that of the operation. I am also well aware that a few patients who have had a distinct perforative appendicitis got well without an operation, or were successfully operated upon after a while, when nature had formed adhesions around the original large effusion. Six years ago I assisted a colleague in opening an intra-abdominal abscess in the linea alba of a boy of six years, who a short while before had voided a large

¹ A distinct chill accompanying the other well-known symptoms always indicates here the sudden invasion of formerly healthy parts by infectious material: a perforation. If adhesions had previously been formed, a localized periappendicular abscess will develop. If the appendix was perfectly free in the abdominal cavity, general diffuse suppurative peritonitis must ensue.

amount of pus through the rectum. According to the history of the case, this surely had originally been a diffuse purulent exudation due to perforative appendicitis. In 1891 I operated on an athletic young man of eighteen, who four days previous had been suddenly stricken down with symptoms of a most acute peritonitis. He was taken home in a wild delirium. For three days and nights it required the steady watch of a number of attendants to keep him in bed. On the fourth day I was called in by the attending physician, and when I opened the abdomen, the incision, made in the loin, evacuated a large abscess with the gangrenous appendix and two fæcal concretions. On gentle palpation the finger could feel the anterior and posterior surfaces of the liver, and enter between the coils of the intestines in many directions. The patient recovered. A similar third case was successfully operated upon by me last January. Of course, under proper treatment and care these patients get well. But the course of their disease has been exceptionally fortunate. Perhaps five out of a hundred have such luck. But exceptions cannot and shall not guide us in drawing our conclusions. It is a fact that patients with acute perforative appendicitis generally die if not operated upon in the very first hours. Dr. McBurney saved fourteen out of twenty-four patients.¹ In my hands, three out of four of the patients operated upon within the first twelve hours after the perforation have recovered. Those operated upon later, five in number, died. This is not the place to give a history of these most interesting cases. I shall publish them at the proper time. Only one I should like to mention very briefly, a case which, I believe, shows beyond doubt that the clinical symptoms of a true perforative appendicitis can rapidly develop without a macroscopical defect in the walls of the vermiform. The case is embodied in those four operated upon within the first twelve hours that I have just men-

¹ N. Y. MEDICAL RECORD, March 30, 1895.

tioned. On the eve of January 12th of this year I was called by our president, Dr. S. Marx, to see with him at once a young lady, who had since 4 P.M. developed symptoms of most acute peritonitis, evidently due to a perforation of the appendix. Patient had complained of occasional pain and discomfort in the right groin for eight days. For safety's sake the doctor very wisely had kept her in-doors under proper directions. There had been no fever at any time, pulse never above 84. Suddenly a chill of moderate severity and short duration set in on the afternoon of the eighth day. The doctor saw her at four. Pulse, 120; temperature, $103\frac{1}{2}^{\circ}$ F.; respiration, 30. Slight tenderness on deep pressure in the appendix region. Two hours later the pulse was 126-132; temperature, 104° F.; respiration, 36. When I arrived at the patient's house at about 7:30 the pulse had gone up to 144; temperature was above 104° F.; respiration same as before. In addition to the former symptoms, Douglas' cul de sac was sensitive on rectal palpation. There was no nausea nor vomiting, and the patient's subjective condition was good. I could but confirm the doctor's diagnosis: perforative appendicitis. After consultation with the family, we agreed to operate at 9 P.M. Meanwhile Dr. Bull had been asked for a consultation by the request of the family. The doctor agreed with our diagnosis and the proposed operation.¹ The latter was performed by me at once. The appendix showed acute catarrhal inflammation, no gangrene, no perforation. There was no faecal concretion, not the slightest adhesion. Neighboring parietal and visceral peritoneum was highly hyperæmic and in the small pelvis some thin sero-purulent fluid. Free

¹ The ideal aim of operative surgery would, of course, be to prevent such an occurrence by the early distinct diagnosis of an approaching acute appendicitis of a serious character and the early removal of the organ, based upon this diagnosis. But shall we ever get so far in making our diagnosis? And if we should, may we hope that all those concerned will consent to the operation at such a time?

drainage to all sides, wound left open with secondary sutures in place. After a short improvement, patient was between life and death with symptoms of acute sepsis for five days. With the help of most careful attention she pulled through. Temperature and pulse had been normal for some time, when on the twentieth day after the operation, fever and pains in the region of the left kidney set in. The urine, which lately had been slightly turbid, suddenly cleared up. We diagnosed obstruction of the ureter by pus and clotted blood, due to perforation of an abscess in one of the pyramids of the kidney into its pelvis, a diagnosis in which Dr. A. Jacobi, who had seen the patient with us a number of times, concurred. That this really was the case could soon be demonstrated. Under strong diuretic treatment the passage from the left kidney to the bladder was suddenly cleared. The urine showed a very heavy, bloody, purulent deposit. All symptoms now at once improved. Analysis of the urine corroborated our diagnosis, proving beyond doubt that an abscess within the left kidney, caused most probably by embolism of streptococci at the time of the onset of the acute sepsis, had spontaneously perforated. Three weeks later the urine was normal. The patient recovered.

This case proves that acute sepsis with general peritonitis can set in in cases of acute appendicitis without any macroscopical lesion, all other clinical symptoms of perforation being present.¹

¹ That we really had to deal in this case with acute septic peritonitis, due to acute inflammation of the appendix with passage of infectious micro-organisms (*bacterium coli commune*, etc.) through its (macroscopically) unbroken walls, was proved to me by the inflamed condition of the appendix and its immediate neighborhood at the time of the operation. 2. The presence of thin, turbid, sero-purulent fluid in the small pelvis, besides the other clinical symptoms. 3. The slight lull in the symptoms after the removal of the appendix, the original focus of the disease thus having been eliminated. 4. The serious, almost fatal sickness, with a pulse running up to 160, under symptoms of acute sepsis for five to six days. 5. The perforation of an intrarenal

If I may still add one or two remarks they are these:

If patients recover from an operation for perforative appendicitis with acute general suppurative peritonitis, we must not always expect a speedy recovery. The favorable condition of such a patient within the first three days after the operation does not permit us to prognosticate continuous recovery as in so many other cases of laparotomy. Convalescence often is slow and protracted.

Further, the age of the patient seems to me to be very important with reference to the prognosis. Patients in the prime of life have the best chance, as in other diseases. Recovery from this disease in patients who have not yet reached puberty is rare.

II.

If generally it is not difficult to answer the question, When shall we operate? in cases showing the clinical symptoms of acute perforative (gangrenous) appendicitis, this is quite different in the ordinary acute attack of appendicitis. All the former symptoms are present, only in a lesser degree. We have at first clearly a localized peritonitis before us. Will these symptoms increase, will they suddenly take a more serious, a fatal aspect? Nobody can answer these questions with a fair degree of probability. No doctor, not the most experienced, can give even a fairly reliable prognosis. The disease is too varying in its symptoms; the virulence of the infecting micro-organisms, principally that of the bacterium coli commune, too different; the pathological-anatomical picture as we can study it during the operation too kaleidoscopic. I have long ceased attempting to make a prognosis in the given case; have long ceased also to state before abscess twenty days after the operation, temperature and pulse going up again when the abscess cavity had been put under pressure by the obstruction of the ureter. 6. The analysis of the turbid material that came down from the left kidney, showing many varieties of pyogenic micro-organisms, no tubercle bacilli.

the operation that we shall find an intra- or extra-appendicular abscess, a fæcal concretion, or a stricture within the appendix, etc. Of course, it sharpens the surgeon's diagnostic capabilities to construct a pathological-anatomical picture before the operation and then to compare this diagnosis, though silently made, with the actual condition. I too do this in every case. But nothing is more fallacious. We therefore have to be candid and confess: we are unable, at present at least, and will, I fear, be unable forever, to diagnosticate the actual lesion of the appendix with reference to its clinical severity in the beginning of an acute attack of appendicitis, especially in the beginning of the first attack. We can only diagnose "acute appendicitis." We thus are also not able to give a reliable prognosis. No doubt this sounds queer. Ordinarily we expect a greater ability of the individual man in giving a strict diagnosis and prognosis with increasing experience. And yet, I believe, just the contrary is the case in appendicitis.¹ We must therefore look out for symptoms which can guide us in determining: Here the work of the physician ends, and here that of the surgeon commences. In former years I never felt more embarrassed than when called upon by a colleague to see with him a case of acute appendicitis in its early stage. I said to myself: If you temporize and suddenly more serious symptoms develop, which in spite of an operation prove fatal, colleague and relatives will perhaps say: "He waited too long." And if you advise and perform the operation at once and the patient should die, the family may say: "He was too quick in using the knife, recovery might have taken place if he had waited." The experience of years has stopped my embarrassment. Well can I understand, however, the position of those who always operate at

¹ The differential diagnosis between acute appendicitis and other diseases does not belong to the scope of this paper. I naturally had to let my reasoning rest on the basis of an undoubted attack of inflammation of the vermiform.

once. There is not much thinking, no worrying. They come, they act, provided there is still time for help. Very often I was tempted to follow these colleagues. Yet, as mentioned above, this way of procedure is not really scientific. It also does not always mean that we do the best for the patient, though we have done the safest. The safest must not necessarily be the best.

I now follow, I fancy with many of my colleagues, a certain distinct plan of observation in trying to determine when the time for the operation has come. Of course, I know that distinct rules to properly guide us here cannot be given. The same symptoms which may have prompted us in one case not yet to advise the operation—the patient's recovery without surgical active interference bearing out the wisdom of our procedure—may prove fatal in the next. Yet by clinging to a certain routine observation with reference to the patient's pulse, less with reference to the temperature, I believe we can in the majority of cases of acute appendicitis be able to perform a "timely operation."

I should say: If all the symptoms of appendicitis are well developed and the pulse has a tendency to go up above 116–118, still more if it goes above 120 and stays there, the indication for the operation is given.¹ The fever has very little value. This is a recognized fact to-day. The incongruity between pulse rate (high) and temperature (low) even gives the case a more dangerous aspect and should always call for quick work. Now and then other specially marked symptoms will let us urge the operation. Thus I have observed that continuous extreme sensitiveness to the touch over the appendix region should give the indication for operation in spite of comparatively low temperature and pulse. In these cases I found a stricture

¹ It has seemed to me that at this height every additional beat of the heart is of great clinical importance. Thus I would consider in a patient with a pulse of 122 the operation far more pressing than in a case with pulse of 118, the doctor always carefully counting the whole minute.

near the tip of a long appendix and its lower extremity blown up, giving the whole vermiform a pear-shaped appearance. In a number of instances we have a certain apprehension, induced partially by increasing experience, partially perhaps by the patient's irregular pulse, or his specially sick appearance, or his indifference, or his pale face and hollow eyes, although the pulse does not press us. Here too, we operate. But for the majority of cases of acute appendicitis I believe the above rule, if strictly adhered to, will generally enable us to be still on time.

But in order to be "on time" the patient must be carefully observed. After physician and surgeon have seen the patient, a nurse must stay at the bedside and take pulse and temperature from hour to hour, day and night. People who can afford it should always give in and call for a nurse at once. Poor patients should be sent to the hospital. If we do this as soon as the diagnosis has been established, we have done the best for the patient. It goes without saying that in observing these cases the use of opiates is absolutely excluded.

Unfortunately there will always be a number of cases of acute appendicitis where even under this régime the operation, in order to be a timely one, will be done too late. In spite of it the patient dies. Therefore, if the attack is sharp, the pulse rising, and if we are in doubt what is best to be done, let us operate rather than wait, even in large cities like New York, where we can always be on hand on short notice.

The country practitioner, who cannot see his patient so often, will save more lives by always having his patients with an acute attack of appendicitis operated upon as soon as possible.

A few remarks here, before I proceed, with reference to the so-called "first attack." It would, no doubt, be very wrong to believe that the first attack of inflammation really is the first pathological symptom which befalls the appendix. "First explosion"

would better express, it seems to me, the actual occurrence. We all know that the fæcal concretions so often found in the appendix, do not form over night; a stricture which shuts off upwardly an abscess within the tip of the organ sometimes found on cutting open an appendix which was removed during the first inflammation, does not develop within a few days. Thus it is clear that explosive material slowly accumulates within the lumen of the appendix, that important changes slowly set in within the different structures of its wall, also often of the nourishing vessels in its mesenteriolum. At last it comes to a climax: the conflagration—*inflammation*—breaks out. And can we diagnose these premonitory symptoms? In a number of instances, I trust, we are able to do so, especially in children, more easily if they have had an attack of appendicitis before. Little girls, for instance, may complain that the belt of their skirts presses and hurts them on the right side, that on buttoning their shoes the pressure of the right thigh against the abdomen causes pain. Or the appetite suddenly changes: formerly favorite dishes are suddenly disliked; others, never taken before, are relished. Defecation may become irregular. Now and then reflex symptoms, especially, it seemed to me, neuralgia in the region of the heart, with irregularity of the pulse may set in. Of course, it is extremely difficult, almost risky, to explain such vague symptoms as an approaching inflammation of the appendix. But if children do complain of such symptoms, the family physician should at least think of a probably threatening inflammation of the vermiform and should never omit to carefully palpate the region of the appendix. If it is found to be sensitive to the touch, a proper regulation of diet and defecation then ordered and strictly adhered to, may still avert the inflammation or defer its appearance. And if the doctor on careful examination cannot find anything wrong in the region of the appendix, also not posteriorly to the ascending colon, where, just in the

instances referred to, the appendix so often is found during a subsequent operation, let him then at least be still more on his guard, if really after a shorter or longer period an acute appendicitis sets in. Just these cases, it seemed to me, may prove fatal on account of acute or subacute gangrene and perforation. Here the most careful observation of the patient, especially of the pulse, is imperative; here an "early" operative interference generally is necessary and may save the patient's life.

One case only out of a great many in my experience let me relate to you, to show that even in younger patients, in children, whose heart responds so much more quickly to an infection, the above given rule, "look out for the pulse," holds good in order to determine the time for the operation. In September of this year I was called by a colleague to see a girl of almost ten years of age, the only daughter of well-to-do parents. Patient had been taken sick with vomiting and abdominal pains two days previously. A laxative given by the mother produced no relief, so the family physician was sent for. He diagnosed appendicitis. It was the patient's first attack. When I saw the girl with him in the middle of the third day of the disease I found: abdomen soft and flat everywhere; ability to pass wind and urine; some pain on deep pressure in the appendix region; temperature, 101.8° F.; pulse, 108; face, pale. After careful consideration of the symptoms present we told the mother that we would call together again in the evening. If the symptoms were on the increase, especially if the pulse went up toward 120, we intended to operate the same night. A nurse was sent for at once. We met at 9 P.M. and found the temperature 103.2° F.; pulse, 122. I sent for my assistants and ordered everything prepared for the operation. Meanwhile the father had called in another surgeon for consultation, a gentleman for whom I have the highest regard, who is known to be a most conscientious doctor, with abundant experience.

After careful examination of the patient he did not favor an immediate operation, and gave the prognosis that by the next morning all symptoms would be found improved. I yielded reluctantly, not without having given vent to my opinion that I considered in this case waiting more dangerous than the operation. The next morning all symptoms were found to be improved. Temperature, 100° F.; pulse, 96. Noon: temperature, 99.8° F.; pulse, 90. We ventured to give the parents hope that this attack might pass without necessitating an operation. Suddenly, in the afternoon at about 3:30, without any warning a slight chill set in. Half an hour later, temperature 103.6° F.; pulse, 132. One hour later, temperature 104.6° F.; pulse the same. Meanwhile I had been sent for. I was busy with an operation, but notified my assistants. When everything was ready for the operation it was almost 8 P.M., temperature then 103.6° F.; pulse, 132. The operation showed the appendix in a markedly catarrhal inflammation; there was no perforation but its tip was adherent between the coils of the intestines; the parietal peritoneum was slightly injected, and there was some murky serous fluid in the small pelvis. Removal of the appendix was quickly performed and the wound drained. The beneficial effect of the operation on pulse and temperature lasted only about twelve hours. Then everything began to increase again. Black copious vomiting, so often found in cases of septic peritonitis of this kind, set in. In spite of everything that human efforts could accomplish the girl died thirty hours after the operation and thirty-five hours after the chill, viz., the beginning sepsis.

Is such a case not apt to make us think? Should it not induce us to let certain symptoms, if present in a case of acute appendicitis, always force the knife into our hands, even in children, or rather especially in children, whose heart, as mentioned above, has so much less power of resisting a septic infection? And

if once our diagnosis, based on good symptoms, should really have been wrong and we should remove an appendix which is healthy—certainly an extremely rare occurrence, perhaps never to come—has such a terrible crime been committed, provided the patient recovers? I maintain: in cases of doubt the operation is generally safer than waiting, provided the patient is still in the early days of the attack. If the physician finds it proper not to call in the surgeon at once, but owing to the continuance of rather severe symptoms does so on the fourth, fifth, or sixth day of the attack, it may be extremely difficult for the surgeon to know what is best to advise. It seems to me that in this stage of the disease a number of patients will be saved under palliative treatment who would die if then operated upon.

All these later remarks, Mr. President and gentlemen, refer to the very first days of the first attack of an acute appendicitis. In the later stages of an acute attack which is on the decline the decision generally is much easier for the surgeon. Suppose that we had resolved to temporize and that the first immediate danger had passed. The pulse, rather high before, slowly drops. What have we to expect, say, on the fourth, fifth, or sixth day of the disease, or still later on? The answer is not difficult. The acute inflammation either continues to subside or an abscess forms. The diagnosis of the latter is easy. As soon as pus is suspected it must be evacuated.

III.

But if a severe inflammation has passed without leaving any serious marks in its course, or if it has been rather mild all the time of the actual disease, "subacute," as we say, should the patient then, well as he may appear, be considered a healthy person and discharged cured? I decidedly say: "No." I hold that an appendix which has been inflamed once, seri-

ously or mildly, must be looked upon as being a diseased organ which is most apt again to give cause for serious trouble at any time in the future. I therefore say, and let me emphasize this as the central point of my paper: *An appendix which has been inflamed once should always be removed after the first attack.* This is best done at the time when the patient has fully recovered from the effects of the disease, say from four to six or twelve weeks after the onset of the inflammation. How long a period may elapse before the next attack occurs of course no doctor can state with any degree of accuracy.

With hospital patients recently I have waited from about one or two weeks only after the subsidence of the inflammatory symptoms. These patients want to go home as soon as they feel well. If they once leave the hospital they will not call for help again before the next attack has set in. And that next attack may prove fatal. Formerly the indication for the removal of the appendix in this class of cases was considered to have come when repeated attacks had run the patient down or had prevented him from enjoying his life.

If a short term for the removal of the appendix after the first attack should be wanted, this operation—in contrast with the “early operation” and the “timely operation”—might perhaps with propriety be called “the prophylactic operation” for appendicitis. If physician, patients, or relatives do not accept the advice to have the appendix removed after the first attack, I urgently emphasize that the operation should be done in the beginning of the second attack, provided it occurs and proves to be of a rather serious character; and if the patient should be fortunate enough to pass even the second attack without any operation, then not to wait still longer to remove the organ. When two attacks have occurred, the third is bound to come. It can be expected so much the sooner the shorter the interval between the former attacks has been. Then at least, gentlemen, do not wait with your

advice to have an operation until that next attack sets in. The explosion may later come so suddenly that the patient is at once beyond the reach of surgical help.

The following sad cases out of a number of similar ones in my experience may serve for illustration—the one showing how the first recurrence, although not severe in the beginning, may suddenly become serious and prove fatal; the other emphasizing the fallacy of believing that after, say, two or three attacks mild in character the next must also run a subacute course.

CASE I.—A girl of almost nine years of age had had a slight attack of appendicitis when five years old. Under palliative treatment she was all right after three days. Three years later she was again suddenly stricken down with vomiting, pain in the region of the appendix, fever, and corresponding pulse. On the night of the first day the pulse had reached 120, but dropped to 84 the next morning. The next days were passed in comparative comfort. On the evening of the fourth day a slight dulness could be made out on gentle percussion above Poupart's ligament; the abdomen was flat, soft, and nowhere else painful to the touch; micturition and defecation were undisturbed, as before; temperature, 101.4° F.; pulse, 96. A beginning abscess was diagnosed and a surgeon called in for immediate operation. When he came four hours later the situation had suddenly changed. Temperature had jumped to 104° F., without a previous chill; pulse to 144; the general subjective condition was undisturbed. The surgeon confirmed the presence of an abscess. To guard against the threatening perforation into the general peritoneal cavity, the operation was performed without delay. The appendix, friable and adherent to the parietal peritoneum, was found to be blown up in its lower portion to a bulb of about a walnut's size and contained a dark brown, purulent fluid of fetid odor. The long upper portion of the organ, corresponding to

about two-thirds of its length, made a sharp curve in about the middle; near the entrance into the cæcum a fæcal concretion was impacted. The surrounding peritoneum appeared to be normal; it was only very little injected. The operation was difficult, but had been carried out with great care and skill. The wound, packed, was left open. Inside of two hours the temperature had gone down to 100.4° F., but soon it began to rise again. The pulse never dropped below 120; fifteen hours after the operation the little girl died under the symptoms of acute sepsis.

CASE II.—A girl of twelve years was seen by me in consultation on September 9th of this year. She had just been moved from the country into the city on account of an acute attack of appendicitis, the third within six months. Pulse and temperature were on the decrease during the last twelve hours. I therefore did not favor an immediate operation, but seriously emphasized the absolute necessity for the removal of the appendix within the next two to four weeks. The doctor, who had called me in, fully coincided with this advice. Soon afterward the girl again seemed well and was up and about. The old family physician now took charge of the family's welfare for the winter. When informed of what had happened and of the proposed operation, he was of a different opinion, as was also a prominent surgeon who examined the patient with him. They did not find the indication for the removal of the appendix, as the girl had then nothing to complain of. Suddenly, seven weeks after I had seen this child, the girl, when in school, was seized by violent abdominal pains, etc., followed by profound shock. As soon as possible she was now operated upon. The appendix was perforated. She died.

I know that the question has yet to be decided: Is an appendix really a diseased organ after one attack of inflammation, is it such a constant menace to the life of the possessor that the urgent advice of its removal after one attack of inflammation is justified? I

for myself am fully satisfied that this is the case. I firmly believe that such a patient continually walks on a volcano; that Damocles' sword hangs over him so long as the appendix is in his belly. This is true so much the more if some time after the attack deep pressure in the region of the vermiform still causes a more or less painful sensation. The answer to this question rests with the general practitioner. It is, in my opinion, the duty of the family physician to carefully follow up these patients in order to determine "how many" actually remain well after one attack of appendicitis. I am convinced that, had we statistics on this important point—and we do not have them yet—not twenty per cent., not ten per cent. of them will be found to remain healthy. And if twenty per cent. actually should remain well forever and eighty per cent. get a second and third attack and so on, does that not count? Are we able to determine who will be the fortunate twenty out of the given hundred cases? And can they not be stricken down more seriously for the second or third time in a place and amid surroundings where good surgical help at the proper time cannot be brought to them—on an ocean trip, in the mountains, on a railway car? Cannot the following attack start so seriously that the patient is at once beyond the reach of surgery?

The surgeon who removes the appendix after one attack of inflammation should, in order to do his share in clearing up this question, publish the pathological-anatomical condition of the organ. Since February of this year I have thus operated four times. Case I. A boy of ten showed an abscess in the tip of a very long appendix. A tight stricture separated it from the upper portion of the organ. Case II. A girl of twenty had an ulceration in the end of the appendix. Case III. A man of twenty-two had a very long appendix and a very narrow mesenterium. The organ was twice curved, like a worm. At this curve there were commencing strictures. Case IV. A lady

of twenty-six showed the vermiform embedded in adhesions and bent in its middle at a sharp angle of about thirty degrees. The point of the angle was drawn down posteriorly. Such lesions will not always be found after one attack, especially not in the so-called catarrhal inflammation. But one of the following attacks may produce them.

I know it is not easy to induce a seemingly healthy person, say of seventeen years, to gather sufficient courage to submit to an operation. I know it requires the firm conviction of the doctor that he is doing the best for his client to advise the parents of a child which has successfully pulled through a serious sickness a short while ago to have that child operated upon. I know it requires absolute confidence in the doctor for the parents to give their consent to the operation at such a time. "Not two out of ten will follow your advice," said a well-known surgeon to me a few months ago, when I told him what I was going to fight for in cases of appendicitis as long as I live. I am, Mr. President and gentlemen, of a different opinion. I am sure the time will come when the question, "When shall we operate for appendicitis?" will be solved by adopting the advice of those colleagues who always operate at once in the beginning of the first inflammation of the appendix, or else will be looked upon in the light just explained. Profession and laity must be educated to this end. I believe almost that the public will sooner listen to such advice than will the majority of general practitioners. And yet, even if he be of a different opinion personally, I deem it the solemn duty of the family physician to present the facts clearly to the family. Let the patients, the parents, the relatives decide.

It is not a proper objection, which many of you may also make, that sometimes six, eight, ten years or more may elapse before a second attack sets in. The objection might be of some little weight if the intervening time were spent in perfect health. But this happens

only rarely. Last winter I had to operate for perforative appendicitis with general diffuse suppurative peritonitis upon a patient who had had the first attack twenty-five years ago. The appendix was of the size of a thumb and more than six inches long. There was free pus in the peritoneal cavity. An intra-appendicular abscess in the tip of the organ, held in by a tight old stricture, had perforated at last. She died thirty hours after the operation. Had this lady enjoyed perfect health during this quarter of a century? By no means. She had been ailing intermittently, had for years been treated for dyspepsia, had within the last three years led a miserable life on account of repeated attacks of abdominal pains. Her doctor's advice to have an operation performed was, nevertheless, always rejected by her. Now is it not worse at the end to have, for instance; a mother of twenty-seven years of age, who had her first attack of appendicitis, say, as a girl of seventeen, torn away from husband and children in her second attack than to have given the patient and relatives the worry and probable trouble of an operation soon after the first inflammation? Should not the parents rather stand the worry, to have, say, their little girl of five years operated upon than perhaps later have to take leave from her forever?

There is only one single point seemingly weak in the chain of proofs in favor of the stand I and I trust many colleagues have taken, or at least soon will take, with reference to the question, "When shall we operate for appendicitis?" That is, we cannot *guarantee* that the patient will recover from the operation. The statistics of Bull, it is true, show us that the operation in the hands of experienced surgeons is almost void of danger. Yet there is almost two per cent. of deaths. My own patients, twenty in number, have all recovered.

But can we guarantee recovery in any other intra-abdominal operation? Does not the general practi-

tioner send patients with reducible hernia to the hospital for operation almost every day? And do we not perform almost every day the radical operation for this trouble, in many cases bilaterally, right away? Is the removal of the appendix after the first attack a more serious operation than the radical operation for hernia? I think not. The patient afflicted with hernia has the inconvenience of wearing a truss. His rupture may suddenly become irreducible or strangulated. The appendix once inflamed may suddenly perforate, no doubt a much more serious accident than the incarceration of a hernia. It is to be regretted that patients who have once passed appendicitis have not to inconvenience themselves by also wearing a truss or similar apparatus. I believe the question, "When shall we operate for appendicitis?" could be much sooner solved.

Now, Mr. President and gentlemen, one of you might ask me with propriety: If you take the stand that every patient who has once passed an attack of appendicitis should have his vermiform removed, why do you not rather join the ranks of those who believe in immediate operative work as soon as the inflammation has commenced? Why do you eventually jeopardize the patient's life by adhering to the principle of the "timely operation"? Is that done only in order to work scientifically, to individualize?

To this query I should answer:

1. The operation is safer in its result if we have not to work in acutely inflamed tissues.
2. If we work in acutely inflamed tissues we are often forced to drain.
3. This drainage may in spite of secondary suture produce or leave a tendency to the appearance of a ventral hernia.

If on the other hand we operate after the first attack, we not only will find the appendix more or less without any adhesions or held down by slight ones only, we not only can close by stitches the entire wound in

its main structures—peritoneum, muscles, and fascia, and thus provide against ventral hernia. Nay, we almost can guarantee to the patient that, if he recovers, he will not get a ventral hernia. On the great importance of this point I need not dwell. That alone should induce the attending physician earnestly to advise his client to have the appendix extirpated before the probable next attack. We owe this progress also to Dr. McBurney. As known by you, last year he recommended applying the principle of the blunt separation of the abdominal muscles according to the direction of their fibres¹ also to the operation for appendicitis performed in the quiescent stage.² The operation is a most excellent one. Its technique is a little more difficult than that of the usual oblique or longitudinal incision. The entrance into the peritoneal cavity is rather narrow; it runs transversely. It is applicable in cases only where the appendix is not confined by too-far-reaching adhesions, a point which of course can be made out only during the operation. It is obvious that after one attack the adhesions are less than if more than one has taken place.

I have operated according to this plan within this year seven times, even in very robust men. In two cases only had I to add the usual incision, this on account of far-reaching adhesions. All patients recovered, so far without a ventral hernia. In five cases in which the plan of the operation could be carried out and the abdominal wall closed by suturing layer by layer, the result is ideal. The skin is perfectly movable over the fascia. The right side of the abdomen has the same strength and tonus as the left side, since no nerves had to be divided. The operation has left no mark except the scar. I am sure this result will be per-

¹ Von Hacker, Witzel: "Gastrostomy;" Albert: "Colostomy."

² "The Incision Made in the Abdominal Wall in Cases of Appendicitis, with a Description of a New Method of Operating." *Annals of Surgery*, 1894, vol. xx., p. 38.

manent. Just think what that means for a child whose life lies before it; what it means for a young man who has to live on the income of his daily bodily work; what it means for an unmarried young woman, who will sooner or later marry and become pregnant.

Thus you see, Mr. President and gentlemen, many surgeons try to improve the result of the operation for appendicitis by perfecting its technique, by selecting the proper time for the same. Work hand in hand with your surgical brethren. Do not think, as many yet do, that the surgeon intends to invade a domain that formerly belonged to you alone, but try with us to further clear up and improve the treatment of this terribly treacherous disease.

Summing up, I would say:

1. In cases of diffuse perforative appendicitis the operation must always be done at once. Patients have the best chance to recover if operated upon within the first twelve hours. Exceptionally patients get well without an operation.

2. In cases of acute appendicitis the patients always need careful observation. If the pulse goes up above 116 to 120 and has the tendency to stay there, the indication for an operation is given.

In case of doubt, the operation is better than waiting.

3. In cases of subacute (mild) attack of appendicitis, also after the first severe attack from which the patient recovers without immediate operation, the appendix should be removed. The appendix, once inflamed, has to be looked upon as a diseased organ which is very apt to give repeated and more serious, even fatal trouble in the future.

When done at this time, we can almost always perform the blunt division of the abdominal muscles according to the direction of their fibres and thus save the patient the probable appearance of a ventral hernia.

